BTS(C) 076(F)

B.Tech Degree VII Semester Examination December 2002

CS 704 COMPUTER GRAPHICS

(1999 Admissions)

Time: 3 Hours Maximum Marks: 100

I.	(a)	What is scan-conversion ? Write down the necessary steps to scan-convert an arc using trignometric method.	(10)
	(b)	Explain Anti-aliasing techniques.	(10)
		OR	
II.	(a)	Write down an algorithm based on flood-fill to fill the interior of any specified area.	(10)
	(b)	Explain Midpoint Circle algorithm.	(10)
III.	(a)	Given a triangle A(o,o), B(1,1) and C(6,2); Write down the transformation matrix to magnify the triangle to twice its size keeping C(6,2)fixed.	(10)
	(b)	Show that pair of parallel lines remain parallel after transformation by a 2 x 2 matrix.	(10)
		OR	
IV.	(a)	Define the terms window, viewport, clipping and viewing transformation. Describe with neat sketches the process of applying the viewing transformations to a 2D scene.	(10)
	(b)	Illustrate Cohen-Sutherland algorithm to clip line segments with a suitable example.	(10)
V.	(a)	Discuss the convex-hull property that holds for Bezier curves.	(7)
	(b)	Explain the use of fractal geometry in graphics.	(6)
	(c)	What are octrees ? How do octrees differ from quadtrees.	(7)
		OR	
VI.	(a)	Describe perspective projection mathematically. What are perspective anomalies ? Describe each.	(10)
	(b)	What is view volume ? How it is specified ? Discuss viewing volumes for 3D clipping.	(10)
VII.	(a)	Explain basic scan-line method to determine hidden surfaces. How does scan line coherence help to reduce computation ?	(10)
	(b)	Discuss Back-Face removal algorithm.	(10)
		OR	
VIII.	(a)	Explain Painter's algorithm. How is the depth of a polygon determined by painter's algorithm.	(10)
	(b)	Explain how sorting and coherence are important in the design of hidden surface removal algorithms.	(10)
IX.	(a)	What are the approches adopted in computer graphics to achieve visual realism. Explain.	(10)
	(b)	Describe Recursive Ray Tracing algorithm.	(10)
		OR	
X.		Write short notes on : (i) Wire frame modelling. (ii) Animation. (iii) Virtual Reality Modelling Language.	(20)

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